

The U.S. national Tips From Former Smokers Antismoking Campaign: Promoting Awareness of Smoking-Related Risks, Cessation Resources, and Cessation Behaviors

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Abstract

Objective. Evaluate the second flight of the U.S. *Tips From Former Smokers* (Tips) campaign. **Method.** Data were analyzed from an online consumer panel of U.S. adult smokers before ($n = 1,404$) and after ($n = 1,401$) the 2013 Tips campaign launch. Generalized estimating equation models assessed whether the Tips advertisement recall was associated with knowledge about smoking-related risks in the Tips advertisements, awareness and use of a toll-free quitline and cessation websites, and quit attempts. **Results.** Seventy-one percent of participants at Wave 2 reported that they recalled seeing at least one Tips advertisement. Smokers who recalled seeing a Tips advertisement were more likely to (a) show increases over baseline in knowledge of health risks such as amputation: 65% versus 34%, $p < .001$; blindness: 27% versus 12%, $p < .001$; and (b) to be aware of a quitline (41% vs. 30%, $p < .001$) and cessation website (28% vs. 20%, $p < .001$). Recall of Tips advertisements was also associated with greater likelihood of reporting having visited cessation websites (odds ratio [OR] = 1.62, 95% confidence interval [CI] = 1.27–2.06), having called a quitline (OR = 2.28, 95% CI = 1.61–3.24), and having made a quit attempt (OR = 1.18, 95% CI = 1.00–1.39), although these results were only statistically significant in the unadjusted models. **Conclusions.** The 2013 Tips campaign was successful in increasing knowledge of health risks and awareness of tobacco cessation resources.

Keywords

health communication, health promotion, media, outcome evaluation, smoking and tobacco use

Smoking remains the leading cause of preventable death and disease in the United States, killing more than 480,000 Americans annually (U.S. Department of Health and Human Services [US DHHS], 2014). Many smokers do not think their smoking will hurt them and are unaware of less publicized health outcomes from smoking (Bansal et al., 2004; Hammond, Fong, McNeill, Borland, & Cummings, 2006; US DHHS, 2014). Smoking prevalence in the United States declined steadily since the 1960s, but the rate of decline has slowed (Centers for Disease Control and Prevention [CDC], 2008, 2011). Starting in 2012, the CDC launched the federal government's first national mass media campaign, the *Tips From Former Smokers* (Tips) campaign, to encourage quitting. The first flight of the Tips campaign in 2012 promoted cessation (CDC, 2012; McAfee, Davis, Alexander, Pechacek, & Bunnell, 2013), but less is known about the effects of the

second Tips flight in 2013, which used both new and old advertisements.

The Tips campaign featured personal testimonials that graphically and emotionally portrayed how smokers' lives were affected by smoking-related diseases. This type of

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messaging strategy has been shown to raise awareness of smoking-related harms and prompt thoughts about quitting, calls to quitlines, and quit attempts (Dunlop, Perez, & Cotter, 2014; Durkin, Brennan, & Wakefield, 2012; National Cancer Institute, 2008). Indeed, compared with the same 12-week period in 2011, the first Tips campaign flight in 2012 doubled call volume to quitlines for cessation support, and visits to the www.smokefree.gov website increased by more than fivefold (CDC, 2012). In a nationally representative cohort of adult smokers (McAfee et al., 2013), the campaign was associated with increased quit attempts. Compared with the 2012 flight of the Tips campaign, the 2013 Tips campaign showed a lesser increase in quitline call volume (22,053 vs. 30,433 calls per week); however, unique website visitors increased to far greater extent compared with the first flight of advertisements (179,254 vs. 52,492 visits per week; CDC, 2012, 2013).

The most recent Surgeon General's report documents the causal link between tobacco use and disease, such as the newly identified association between smoking and diabetes (US DHHS 2014). The 2013 Tips campaign featured smoking-related health complications of diabetes, such as amputation and blindness, that were not featured in the 2012 Tips campaign. Previous studies have shown that the majority of smokers are already fairly knowledgeable about the risks of lung cancer and heart disease from smoking but lag in their knowledge of smoking-related health complications such as amputation and blindness (Kennedy et al., 2012; Swayampakala et al., 2014). Evidence shows ceiling effects for the well-established health risks from smoking and suggests the introduction of new risks on health warnings on cigarette packaging (Swayampakala et al., 2014). However, emphasizing lesser known and rarer health risks may lower the impact of these health messages since smokers may not perceive the relevance to them. The present study sought to examine how the introduction of lesser known health risks, such as amputation and blindness, in advertisements may have affected smokers' knowledge of these health risks. This study also reported the effects of the 2013 Tips campaign on awareness of cessation resources and quit attempts.

Method

Study Design

This study used a pre- and postcampaign design where we assessed smokers' responses before and after the 2013 Tips campaign was aired between March 4 and June 23, 2013. The campaign included advertising in English and Spanish on television, online, radio, print, billboards, buses and bus stop shelters, and social media (i.e., Facebook and Twitter). This study assessed six of the Tips advertisements broadcast on either television or the Internet in 2013. Television advertisements were broadcast through national cable networks in all 210 U.S.

media markets and local television channels in 67 of these markets (CDC, 2013). National television advertisements were aired on a 1-week-on, 1-week-off basis through the first 12 week of the campaign while local television advertisements and national online advertisements were aired continuously throughout the 16-week campaign (CDC, 2013). Overall media buy for national television and online advertisements were smaller in 2013 than in 2012¹ (CDC, 2013).

This study focused on assessing two lesser known health risks, amputation and blindness, and one well-established health risk, heart attack. These health risks were selected for study in part because they were also included on package warnings in the other countries and were assessed as part of the larger study that examined the public health impact of pictorial health warning labels across four comparable countries including the United States (Swayampakala et al., 2014). The three risks were depicted in three of the 2013 Tips advertisements. One ad featured a person with diabetes explaining his blindness in one eye and a leg amputated due to complications worsened by smoking. Another advertisement featured people undergoing amputations due to Buerger's disease, a disorder exclusively linked to smoking. The last advertisement featured a man showing the scar on his chest from a heart attack that was caused by smoking. The risks depicted in the other three Tips advertisements were not assessed in this study because these risks were not included in the larger study.²

Sample

Data were analyzed from two waves of the larger study that aimed to understand tobacco policy and program effects on smokers across countries over time. The current study involved U.S. adult smokers who participated in Global Market Insite's (GMI) online consumer panel, which is designed to be representative of U.S. consumers (GMI, 2011) with an additional oversample of 400 Latinos. The rationale for this oversampling strategy was to have sufficient sample size for comparisons between U.S. Latinos (approximately two thirds of whom have Mexican heritage) and culturally similar Mexicans (who were surveyed in the parent study). At baseline (January 18 to February 3, 2013; Wave 1), 1,404 participants were recruited from GMI's general population sample. The follow-up survey (May 17 to June 9, 2013; Wave 2) overlapped with the Tips campaign (March 4 to June 23, 2013). To maintain sample size across waves, the Wave 2 sample ($n = 1,401$) comprised both participants who were successfully followed from baseline and a replenishment sample of smokers. Eligibility for entry into the study included living in the United States, being 18 to 64 years old, having smoked at least 100 cigarettes in their lifetime, and having smoked at least once in the prior month. Of participants who were successfully followed from baseline ($n = 603$), both smokers and those who had quit smoking since baseline answered the Wave 2 survey.

Measurements

Dependent Variables

Knowledge of smoking risks. At both waves, participants were shown a randomly ordered list of the same health risks, including amputation, blindness, and heart attack. For each risk, participants were asked if it was caused by smoking. Response options were dichotomized as either “yes” or “no/don’t know.”

Awareness and use of cessation resources. At both waves, participants were asked if they had noticed a toll-free telephone number to get advice about quitting (i.e., quitline) in the last 4 months. Those who answered affirmatively were asked if they had called the quitline in the last 4 months. Noticing information about and visiting a website for cessation advice were assessed in the same manner (1 = “yes”; 0 = “no,” “don’t know,” or missing because they had not noticed the website and were therefore not asked follow-up questions).

Quitting behavior. At both waves, smokers were asked about quit attempts in the past 4 months (1 = *any attempts*; 0 = *none or don’t know*). People who reported they had quit at follow-up were also classified as having tried to quit.

Independent Variables

Exposure to Tips advertisements. At follow-up, participants were presented with a picture from and description of six Tips advertisements, and they reported whether they had seen each on either television or the Internet in the previous 3 months. Measures of campaign recall were derived in two ways: (a) recall of at least one Tips advertisement versus no recall; (b) for each of three health risks, recall of the Tips advertisement that addressed the specific health risk (i.e., amputation, blindness, heart attack) and recall of other Tips advertisements that did not address the specific health risk versus no recall. Dummy variables were created for each of these categories, with no recall as the reference group, in which we also included all observations from baseline.

Adjustment Variables. Sociodemographic variables were collected at both waves, dummy coded, and included age, sex, educational attainment, annual household income, and race/ethnicity. Smoking-related variables were also collected at both waves, including smoking status/intensity, intentions to quit, and any attempts to quit in the prior 4 months. To adjust for time-in-sample effects, a variable was derived to indicate prior study participation (i.e., Wave 2 observations for participants who were followed from baseline) versus not (i.e., all baseline observations and new recruits at Wave 2). To adjust for biases in self-reported campaign recall, participants were asked if they had seen an advertisement that had not been broadcast in the United States. Participants were also asked whether hepatitis was caused by smoking (which

it is not). For these potential biases, responses were dichotomized as indicative of self-report bias versus not.

Analysis

All analyses were conducted using Stata version 13.1 (StataCorp LP, 2014) and were weighted to reflect sex, age, and educational profiles of adult U.S. smoking population except χ^2 tests that examine differences among participants in Table 1. Generalized estimating equations models were estimated using pooled data from both waves because this strategy allows us to maximize power while controlling for time-in-sample effects and correlations (exchangeable structure assumed) due to repeated observations in participants who were followed up (Thrasher et al., 2014). All adjusted models controlled for sociodemographics, smoking behavior, survey wave, time-in-sample effects, and bogus campaign recall. In models predicting knowledge of health risks, the bogus knowledge question was also included as a covariate. For sensitivity analyses, we analyzed all outcomes using data only from participants who completed both waves ($n = 603$). In these models, independent variables included the exposure variables from Wave 2 and adjustment variables from Wave 1, including adjustment for the level of the dependent variable at Wave 1 (Huang et al., 2014; Thrasher et al., 2011).

Results

Sample Characteristics

Of the 1,404 smokers who completed the baseline survey, 43% ($n = 603$) completed the Wave 2 survey, which was supplemented with an additional 798 newly recruited smokers. Participants at Wave 2 ($n = 1,401$) had relatively higher education attainment, income, and tended to smoke more frequently than those at baseline (Table 1). Sociodemographic characteristics were similar among participants who did and did not recall a Tips advertisement at Wave 2; however, Tips advertisement recall was associated with greater likelihood of intending to quit and having recently attempted to quit.

Campaign Recall

Seventy-one percent of participants at Wave 2 reported that they recalled at least one Tips advertisement. Among them 39% recalled the Tips advertisement talking about amputation and 32% of participants recalled the Tips advertisement about blindness while 20% recalled the Tips advertisement about heart attack. About 10% of participants recalled the bogus advertisement.

Change in Knowledge of Tips-Targeted Risks

Knowledge of Tips-targeted lesser known risks significantly increased from baseline to follow-up (33% to 46% for

Table 1. Comparison of Sample Characteristics Between Baseline and Wave 2 and Recalled Versus Not Recalled.

Sample characteristics	Baseline (n = 1,404)	Wave 2		
		Entire sample (n = 1,401)	No recall (n = 402)	Recall n = 999
Age (mean)	39.6	39.2	39.7	39.0
18-24	17%	17%	15%	17%
25-34	24%	28%	27%	28%
35-44	21%	19%	20%	19%
45-54	19%	18%	20%	18%
55-64	19%	18%	18%	18%
Sex				
Male	48%	48%	47%	48%
Race/ethnicity				
White	52%	53%	53%	53%
African American	6%	5%	5%	5%
Latino	38%	38%	37%	39%
Other	4%	4%	5%	3%
Education ^c				
High school or less	39%	29%	29%	30%
College or some university	41%	42%	41%	42%
Completed university or higher	20%	29%	30%	28%
Income ^b				
\$29,999 or less	38%	31%	31%	32%
\$30,000-\$59,999	33%	35%	34%	35%
\$60,000 or more	29%	34%	35%	33%
Smoking intensity ^a				
Non daily	30%	28%	28%	28%
Daily, ≤10 cigarettes/day	26%	31%	27%	32%
Daily, >10 cigarettes/day	44%	41%	45%	40%
Quit intentions in next 6 months ^f	43%	43%	35%	46%
Quit attempts in the past 4 months ^e	40%	43%	36%	45%
Knowledge of amputation ^{c,f}	33%	46%	32%	51%
Knowledge of blindness ^{c,e}	11%	18%	13%	20%
Knowledge of heart attack ^f	78%	77%	69%	81%
Noticed quitline information ^{a,f}	32%	36%	23%	41%
Called quitline ^{b,f}	4%	7%	3%	9%
Noticed website information ^{a,f}	22%	26%	14%	31%
Visited website ^{a,f}	9%	12%	5%	14%

Note. All results were unweighted.

^a $p < .05$, ^b $p < .01$, ^c $p < .001$ for Wave 2 versus baseline; ^d $p < .05$, ^e $p < .01$, ^f $p < .001$ for recalled at least one Tips advertisement at Wave 2 versus not recalled any of Tips advertisements at Wave 2.

amputation, $p < .001$; 11% to 18% for blindness, $p < .001$), but knowledge of the Tips-targeted well-known risk remained consistently high (78% to 77% for heart attack, $p = .94$; Table 1). As shown in Table 2, the increase in knowledge of amputation and blindness was related to recalling having seen Tips advertisements depicting these health conditions (65% vs. 33% for amputation, $p < .001$, adjusted odds ratio [AOR] = 3.55, 95% confidence interval [CI] = 2.54-4.96; 25% vs. 10% for blindness, $p < .001$, AOR = 2.00, 95% CI = 1.23-3.24).

However, neither recall of the Tips advertisement that addressed heart attack nor recall of the Tips advertisement that did not address heart attack was associated with greater

knowledge of heart attack. The results remain consistent when analyzing a smaller cohort sample followed from Wave 1 to Wave 2: only recall of advertisements featuring lesser known risks is associated with greater knowledge of corresponding lesser known risks (Table 2).

Awareness and Use of Cessation Resources and Quit Behaviors

Awareness of cessation resources was significantly raised from baseline to follow-up (32% to 36% for quitline, $p = .017$; 22% to 26% for website, $p = .020$; Table 1). Recall of any Tips advertisement was significantly associated with

Table 2. Association Between Tips Advertisement Recall and Change in Knowledge of Tips-Targeted Risks, the Awareness and Use of Cessation Resources, and Quit Attempts.

Dependent variable	Tips advertisement recall	%	Pooled data (n = 2,805)		%	Cohort data (n = 603)	
			OR [95% CI]	AOR [95% CI]		OR [95% CI]	AOR [95% CI]
Amputation	No recall of any Tips ads	33	1	1	33	1	1
	Recalled Tips ads not addressing the risk	34	1.13 [0.90-1.42]	1.22 [0.88-1.70]	38	1.16 [0.70-1.90]	1.17 [0.70-1.96]
	Recalled Tips ads addressing the risk	65	3.41 ^c [2.70-4.31]	3.55 ^c [2.54-4.96]	68	3.55 ^c [2.08-6.06]	3.67 ^c [2.12-6.33]
Blindness	No recall of any Tips ads	10	1	1	13	1	1
	Recalled Tips ads not addressing the risk	15	1.44 ^a [1.06-1.95]	1.32 [0.80-2.16]	17	1.18 [0.61-2.26]	1.20 [0.61-2.37]
	Recalled Tips ads addressing the risk	25	2.87 ^c [2.12-3.88]	2.00 ^b [1.23-3.24]	27	2.43 ^a [1.23-4.78]	2.46 ^a [1.24-4.88]
Heart attack	No recall of any Tips ads	77	1	1	72	1	1
	Recalled Tips ads not addressing the risk	79	1.09 [0.88-1.36]	1.36 [0.95-1.94]	83	1.55 [0.88-2.74]	1.66 [0.92-3.01]
	Recalled Tips ads addressing the risk	81	1.27 [0.88-1.84]	1.54 [0.98-2.44]	81	1.48 [0.66-3.32]	1.73 [0.75-3.96]
Noticed quitline	No recall of any Tips ads	30	1	1	20	1	1
	Recalled 1+ Tips ads	41	1.59 ^c [1.32-1.92]	2.04 ^c [1.48-2.81]	41	2.69 ^c [1.69-4.27]	2.57 ^c [1.60-4.12]
Called quitline	No recall of any Tips ads	3	1	1	2	1	1
	Recalled 1+ Tips ads	8	2.28 ^c [1.61-3.24]	1.41 [0.62-3.21]	6	2.68 [0.89-8.02]	1.62 [0.54-4.89]
Noticed website	No recall of any Tips ads	20	1	1	10	1	1
	Recalled 1+ Tips ads	28	1.52 ^c [1.25-1.84]	1.96 ^b [1.29-2.98]	25	3.35 ^c [1.77-6.34]	2.98 ^b [1.55-5.73]
Visited website	No recall of any Tips ads	7	1	1	3	1	1
	Recalled 1+ Tips ads	12	1.62 ^c [1.27-2.06]	1.68 [0.91-3.11]	9	2.96 ^a [1.05-8.35]	1.90 [0.64-5.59]
Quit attempt	No recall of any Tips ads	37	1	1	30	1	1
	Recalled 1+ Tips ads	41	1.18 ^a [1.00-1.39]	1.21 [0.85-1.73]	36	1.23 [0.79-1.93]	1.22 [0.75-2.00]

Note. ads = advertisements. No recall of any Tips advertisements for pooled data includes both participants who did not recall any Tips advertisements and ALL participants from Wave 1. ^a $p < .05$; ^b $p < .01$; ^c $p < .001$. No recall of any Tips advertisements for cohort data includes participants who completed both waves and did not recall any Tips advertisements at Wave 2.

All the analyses were weighted and adjusted for age, sex, educational attainment, annual household income, race/ethnicity, smoking status/intensity, and intentions to quit. Analyses using pooled data also adjusted for time-in-sample effects. Analyses using cohort data adjusted for baseline levels of outcome variables and other covariates except recall of the bogus Tips advertisement, which was measured at Wave 2 only.

greater likelihood of noticing the quitline and cessation websites in both bivariate and adjusted models for pooled data (Table 2). However, this significant association was observed only in unadjusted models for visiting cessation websites (12% vs. 7%, OR = 1.62, 95% CI = 1.27-2.06), calling the quitline (8% vs. 3%, OR = 2.28, 95% CI = 1.61-3.24), and having made an attempt to quit in the bivariate model (41% vs. 37%, OR = 1.18, 95% CI = 1.00-1.39), but not in the adjusted models. In the smaller cohort sample, associations between recall and calling quitlines and having quit attempts were no longer significant in the bivariate model (Table 2).

Discussion

The findings from this study show that the 2013 Tips campaign was successful in reaching about 7 out of 10 smokers, which was slightly lower than the 2012 Tips campaign (78%) that had a larger media buy (McAfee et al., 2013). Exposure

to the Tips campaign was associated with an increased knowledge of health risks for amputation and blindness but not for heart attack. Most smokers already were aware that smoking causes heart attack so it is not surprising that the campaign did not change knowledge of this complication of smoking. In contrast, smoking-related health complications such as amputation and blindness did increase as a result of exposure to the Tips campaign suggesting that the campaign was effective in increasing knowledge levels of these lesser known health consequences from smoking.

The greater change found for knowledge of amputation compared with knowledge of blindness was likely due to the fact that two Tips advertisements depicted smokers' lives affected by amputation, compared with only one advertisement that mentioned blindness. Furthermore, the blindness outcome was much less central to the Tips message than those that highlight amputation as a consequence of smoking. Regardless, the overall findings from this study support the conclusion that the Tips campaign was successful in increasing smokers'

knowledge of lesser known health consequences from smoking as depicted in the advertisements. In contrast, the campaign did not increase knowledge of an already well-known risk of smoking—heart attack. This result does not imply that future campaigns and health messages should focus primarily on lesser understood risks from smoking, since there is value gained from repeated reminders of all the health consequences of smoking (Dunlop, Cotter, Perez, & Wakefield, 2013; Durkin et al., 2012) when it comes to prompting smokers to take action to change their smoking behavior.

The findings from this study are consistent with other studies that have demonstrated that exposure to the Tips advertisements increased both awareness and utilization of cessation resources (CDC, 2012, 2013; McAfee et al., 2013). The proportion of smokers who visited websites was somewhat higher than those who called the quitline (14% vs. 9%). This may be because smokers who call quitlines are more likely to be in an action phase of cessation than smokers who visit websites and who may be contemplating or preparing for a quit attempt. In other words, smokers who are in the active phase of quitting are fewer in number than those who are in the contemplation or preparation stage (Prochaska & DiClemente, 1983). The higher rates of visiting websites may also be due to the nature of online advertisements in the 2013 campaign, which facilitated access to the website by directing viewers to merely clicking on the advertisement (CDC, 2013).

Quit attempts among smokers in our study were generally stable over time, although we found a moderately greater incidence of quit attempts among those who recalled the Tips campaign advertisements compared with those who did not (i.e., 44% vs. 39%). This association was statistically significant only in the unadjusted model in the pooled sample, but was not significant in the small cohort sample. Nevertheless, the point estimates we found were similar to those from a larger cohort study of 2012 Tips campaign evaluation ($n = 3,051$) that was more adequately powered to detect an effect (AOR = 1.18, 95% CI = 1.05–1.34; McAfee et al., 2013). Smaller sample size in the present study and less media buy for the Tips campaigns in 2013 than in 2012 may explain this lack of significant impact on quit attempts. Additionally, smokers may feel skeptical and irrelevant to lesser known smoking-related risks, thus less motivated to attempt to quit smoking. Future research should examine the impact of including lesser known or new risks in cessation communication content on quit beliefs and behaviors relative to well-known risks.

Study limitations include potential external validity issues. Our participants came from an online consumer panel purposefully selected to be representative of key consumer segments (GMI, 2011). The online nature of our sample may not have substantially biased results as most people in the United States have Internet access (84.2% in 2013; World Bank, 2014). Panel participants may nevertheless be quite different from general, population-based samples. Our sample appeared younger, more male, more Latino, and had relatively higher educational attainment compared with smokers in the 2009–2010 National

Adult Tobacco Survey (CDC, 2014). Other research suggests that Tips-type advertisements are relatively more effective among smokers with lower educational attainment (Wakefield et al., 2011), and if this holds true then we may have underestimated the campaign effects. This study assessed campaign recall through TV or the Internet only rather than all the channels used to promote Tips advertisements; therefore, we may have missed those exposures and have underestimated campaign effects. However, TV and the Internet are the channels that are generally most effective (National Cancer Institute, 2008). To investigate contextual factors that might have influenced our outcomes, we used LexisNexis search results of broadcast news transcripts and news articles and found no evidence of other large-scale media campaigns, interventions, or policy changes during the study period that might account for the effects that we found. The exposure assessment approach we used may be biased, as recall is an imperfect proxy for exposure. Nevertheless, we found statistically significant changes in key outcomes over time when we did not rely on recall, and our models that assessed recall included statistical controls to adjust for biased recall and “yea saying” around endorsement of smoking-related risks. Lastly, the study was unable to assess whether exposure to the campaign affected successful quitting behavior because so few smokers had been quit for at least 30 days at follow-up ($n = 19$). While future research should examine quit success, it should be recognized that the impact of a public service campaign such as the Tips campaign on smoking cessation will likely be difficult to demonstrate since sustaining a quit attempt related mainly with the strength of someone’s nicotine dependence, not their motivation to stop smoking (Borland et al., 2010). Any effect of the Tips campaign on smoking cessation is likely to be indirectly mediated through the effects on motivating smokers to make a quit attempt and perhaps link them to cessation support services.

In summary, the 2013 Tips campaign that featured real stories of how smoking has affected the lives of smokers appears to have had broad reach and to have increased knowledge of smoking-related risks as well as awareness and utilization of cessation resources.

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Notes

1. The media buy for the 2012 campaign was 1,200 GRPs while it was 800 GRPs for the 2013 campaign. The source of the information is personal communication with the CDC Office on Smoking and Health.
2. The three advertisements depicted a woman with a hole in her throat talking about preparing for the day by putting in her teeth and wig in one ad and her wish that her grandchildren could have heard her voice before losing her voice cords due to smoking in another ad, and a man talking about how hard his dying from smoking is for him to say goodbye to his grandchildren.

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